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MARCH 9.

The President, Dr. RUSCHENBERGER, in the chair.

Eighteen members present.

The Feet of Bathmodon.—Prof. COPE described the structure of the feet in *Bathmodon*. He pointed out the existence of five digits on each of the feet, composed of very short metapodial and phalangeal bones. The carpus resembles that of the Toxodonts as described by Prof. Burmeister, but differs in the much greater ulno-carpal articulation. The carpus differs from that of the Proboscidea in the considerable mutual articulation of the unciform and lunar bones. The tarsus more nearly resembles that of the Proboscideans, but differs in the abbreviation of the navicular bone, on the inner side. This abbreviation permits the cuboid, which is wide as in the Elephants, as well as the ectocuneiform, to come in contact with the astragalus. On these grounds, the genus *Bathmodon*, and probably *Coryphodon*, Owen, which is nearly allied to it, were separated as a distinct order from the *Proboscidea*, under the name of *Amblypoda*, and two suborders were recognized, viz.: *Pantodonta*, represented by *Bathmodon*, and *Dinocerata*, represented by *Uintatherium* and *Loxolophodon*.

The death of Dr. G. W. Norris was announced.

MARCH 16.

The President, Dr. RUSCHENBERGER, in the chair.

Thirty-one members present.

Remarks on some Marine Rhizopods.—Prof. LEIDY remarked that he had spent a short time last August at Noank, on the coast of Connecticut, where Prof. Baird was then engaged in pursuing his inquiries and investigations as United States Commissioner of Fisheries. Through the kindness of Prof. Baird he had been enabled to make a few observations on some marine Rhizopods.

Some years ago, on the beach at Newport, R. I., he had noticed that the ripple marks of the sand were crested with white particles, which could be scraped up by the handful, and which he at first viewed as the pulverized debris of various calcareous shells. On closer examination the material was found in large proportion to consist of the dead shells of Foraminifera. The immense quantities of these remains, extending in innumerable ridges over

the broad expanse of the beach, had led him to suspect that he would find them living in the greatest profusion in the dredgings off the coast of Noank. In this view he had been disappointed, though many living individuals were obtained in dredging, adhering to hydroids, sponges, and the roots of fuci. The number of species observed was small, though the individuals of several of them were numerous. In the best condition, and especially abundant, were two Foraminifers, a *Miliola*, and a *Rotalia*, exhibiting some variety of form.

The *Miliola* resembles the *Quinqueoculina meredionalis* of Dorbigny, and is probably the same species. The shell, from $\frac{1}{8}$ th to $\frac{1}{6}$ th of a line in breadth, is white and more or less translucent, or is colorless and transparent. It exhibits five compartments or cells, in the mouth of the last and largest of which there is a blunt, conical tooth. The interior soft structure was yellowish-brown, or pinkish-brown, darkest in the smallest cell, successively lighter in the others, and sometimes nearly colorless in the last or largest cell. In the last cell, and less frequently in the second cell, the soft matter exhibited many globules of transparent, colorless liquid. In the active condition the animal protruded a multitude of exceedingly delicate pseudopods, which, radiating from the mouth, ramified and frequently anastomosed in the most intricate manner, as usual among Foraminifers.

The *Rotalia* is a beautiful, spiral, many-chambered shell, from the $\frac{1}{10}$ th to the $\frac{1}{6}$ th of a line in breadth, and strongly resembles the *Rosalina varians*, as represented in Figure 8, Plate III. of Schultze's Polythalamien. The shell is white and more or less translucent, and is composed of from twelve to eighteen cells. The soft structure within is dark-reddish or yellowish-brown in the smallest cells, light brown or yellowish in the larger cells, and faintly yellowish or colorless in the largest cells. Pseudopods radiated everywhere from the minute pores of the shell.

A few Polythalmous shells were observed, which appeared to be composed of particles of sand cemented in the same manner as in the fresh-water Diffugiens. One of them was a spiral shell like a *Rotalia*, composed of eighteen cells, and measuring about $\frac{1}{7}$ th of a line in breadth. The soft structure within the smallest cells appeared to be amber-brown.

Another of these arenaceous shells resembled in its shape and the alternation of the cells the *Textilaria agglutinans* of Dorbigny, of the West Indies. A specimen of thirteen cells was about the $\frac{1}{10}$ th of a line long by $\frac{1}{16}$ of a line at the broad end. The soft structure was reddish-brown within the smallest cells, becoming successively lighter in the larger cells, until in the last or largest it was colorless, or nearly so.

A third form consisted of a straight or slightly bent series of cells, for the most part oblate spheroidal, and successively increasing in size. The first cell is globular and larger than the few

succeeding ones. The last or largest cell is more of a conical form. The interior structure was faintly yellowish or nearly colorless. A specimen of eighteen cells was $\frac{1}{4}$ th of a line long, with the last cell about $\frac{1}{30}$ th of a line in diameter.

An interesting Rhizopod, not pertaining to the Polythalamous foraminifers, to which my attention was directed by Prof. Verrill, frequently occurred in the mud dredged off the Connecticut coast.

The same creature is referred to by Prof. Verrill in the Report of the Commissioner of Fish and Fisheries for 1871 and 1872, page 503, as being extremely abundant in the clear siliceous sand dredged from Vineyard Sound.

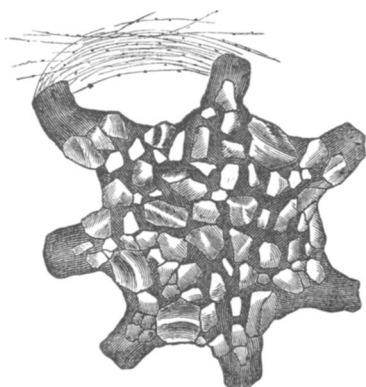
The creature was discovered by Dr. Sandahl in the Bohnsläuis Archipelago, and is described in the Ofvers. K. Vetensk. Ak. Forh., Stockholm, 1857, 301, under the name of *Astrorhiza limicola*. It is also referred to in Thomson's "Depths of the Sea," p. 75, as occurring in the Atlantic ooze off the Faroe Isles.

The case of this Rhizopod is constructed of angular particles of quartz-sand, cemented by tenacious matter mingled with the finest dark-colored mud. The body of the case is discoid or lenticular, with a number of short cylindroid processes radiant from the margin, giving the case altogether an irregular stellate form, as represented in the accompanying wood-cut.

Sandahl describes the shell as exhibiting scattered yellowish-brown spots, unequal, irregular, and somewhat shining. These spots, in the specimens examined by me, are due to the translucent quartz particles through which the yellowish color of the interior soft structure of the animal is seen. Sandahl gives the number of radii from 10 to 15, and the size of the case from 3 to 4 lines. Our specimens measured from $2\frac{1}{2}$ to 4 lines, and exhibited radii from 6 to 13 in number.

The interior soft substance of the little mud stars is a viscid, mucoid matter. The ectosarc is colorless. The entosarc was granular and yellowish, sometimes containing ova-like bodies, with darker yellow or orange-colored contents. Besides these the entosarc contained clear globules and a multitude of diatoms, principally a species of *Coscinodiscus*.

I failed to see the *Astrorhiza* in a very active condition, probably from the hot summer weather too quickly giving rise to decomposition in the material collected. Only in two instances did I discover



Astrorhiza limicola, magnified 10 diameters.

the animal with a number of delicate filamentous pseudopods projected from the processes of the disk. The pseudopods as seen, and as represented by Sandahl, are like those of the Foraminifera.

In the single-chambered character and structure of the case, *Astrorhiza* resembles the fresh-water *Diffugia*, but differs in having many orifices, to protrude the pseudopods, instead of a single one.

Notes on the Character of the Lower Silurian Slate at their Outcrops.—Prof. FRAZER remarked that a fine-grained hydromica slate from a point on the Peach Bottom Railroad, about five miles from York, had been submitted to Dr. GENTH for an investigation of the amount of its alkaline constituents.

The specimen was of greenish-gray color and semi-unctuous lustre, and contained, in a chloritic mass, fine scales of mica, and exceedingly fine particles of a mineral of apparently metallic lustre.

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|----------------|---|---|---|---|---|---|---|----------------|
| The water gave | . | . | . | . | . | . | . | 2.36 per cent. |
| Potash | " | . | . | . | . | . | . | 1.05 " |
| Soda | " | . | . | . | . | . | . | 0.75 " |

With a decided trace of lithia (possibly from contained Lepidolite).

Dr. Genth adds, "Taking the potash as belonging to Damourite, we should have nearly 9 per cent. of it; and the soda to paragonite there would be 9.6 per cent."

The mass of this rock is chloritic while the small speck of pearly mica-like mineral might be Euphyllite, or (in view of the per cent. of Li) Cookeite. In the former case both the K and Na would be associated together in the same constituent, while the Li would remain unaccounted for. Vogtite, Margarodite, or the species examined by Smith & Brush, from Litchfield, Connecticut, and which was intermediate between Margarodite and Paragonite, might be represented.

But the plan proposed by J. D. Dana, of characterizing these partially decomposed slates simply as hydro-mica slates, seems to fulfil every requisite of accuracy.

MARCH 23.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-nine members present.

The following papers were presented for publication:—

"On Buteonine Subgenus *Craxirex*, Gould." By Robert Ridgway.

"On *Nisus Cooperi*, Bonaparte, and *N. Gundlachi*, Lawrence." By Robert Ridgway.